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ABSTRACT

This annual report begins with a brief overview of cooperative research objectives and background. The five major sections are 1) "Cooperative Research Authorization" including the basic authorizations and subsequent amendments; 2) "Management Policies and Procedures;" 3) "Definitions and Distinctions" covering major continuation programs and projects and special allocations; 4) "Highlights of General R&D Accomplishments" including basic research, early childhood education, Sesame Street, reading, quality of life, higher education, vocational education, teacher education, instructional systems, curriculum development, educational cooperatives for isolated schools, urban education, school administration, school finance research, and regional research; and 5) "Highlights of Activities Supported by Special Budget Line Authorizations" including research training, dissemination, national achievement study, major demonstrations, evaluations, statistical surveys, and research facilities. A concluding section considers some of the problems faced in fiscal year 1970. Four appendixes list the functions of the Advisory Council on Research and Development, R&D centers receiving cooperative research support during fiscal year 1970, educational laboratories receiving cooperative research support during fiscal year 1970, and ERIC clearinghouses in operation during 1970. (MBM)

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RESEARCH FOR PROGRESS IN EDUCATION

ANNUAL REPORT / FISCAL YEAR 1970

Cooperative Research Public Law 83–531 As Amended

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
ELLIOT L. RICHARDSON,
Secretary

Office of Education
S. P. MARLAND, JR.,
Commissioner

National Center for Educational Research and Development
HARRY F. SILBERMAN,
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Letter of Transmittal

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education

Washington, D.C. 20202

May 17, 1971

To the Congress of the United States:

I am pleased to submit the annual report of the educational research and research-related activities carried out pursuant to the authorizations of the Cooperative Research Act (Public Law 83-531, as amended), for the fiscal year ending June 30, 1970. The report is transmitted in accordance with the requirements of section 2 (d) of the act.

The major focus of the report is on the educational research, surveys, and demonstrations, the information disseminating activities, and the research training receiving Cooperative Research support. The bulk of this support was administered by the National Center for Educational Research and Development, formerly the Bureau of Research. Toward the end of the fiscal year, the dissemination component was separately identified as the National Center for Educational Communication. Special allocations for evaluations and statistical surveys were administered by the Office of Program Planning and Evaluation and the National Center for Educational Statistics.

Respectfully,

S.P. MARLAND, JR.
U.S. Commissioner of Education

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I. OVERVIEW

COOPERATIVE RESEARCH OBJECTIVES

The primary objective of Cooperative Research is to further continuing qualitative improvement of teaching and learning through systematic research, development, demonstration, evaluation, and dissemination. This effort is predicated on the assumption that improvement of teaching and learning inevitably involves decisions and choices from among known alternatives. The purpose of the Cooperative Research effort, therefore, is to improve the alternatives from which to choose and the precision with which choices can be made.

More specifically, Cooperative Research supports systematic research efforts to:

1. Advance knowledge about learning, instructional practices and materials, and educational organization and administration as these are related to the larger society which education serves.
2. Use new and existing knowledge to develop and validate improved practices, techniques, materials, equipment, and organizations.
3. Demonstrate and disseminate the results of these efforts to educators and the public.
4. Train manpower for the research functions required for continuous educational improvement.

Support authorized for research facilities provides permanent settings and modern equipment for some installations where continuous exemplary research and development can be carried on.

BACKGROUND AND CONTEXT

A systematic program to improve education through research is relatively new. The Cooperative Research Act (Public Law 83-531) was enacted July 26, 1954, and implemented with about $1 million in salary and expense money in fiscal year 1957. The act initially authorized the Commissioner of Education to enter into jointly financed cooperative arrangements with universities and colleges and State education agencies for the conduct of research, surveys, and demonstrations in the field of education.

Subsequently, research authorizations in titles VI and VII of the National Defense Education Act of 1958 provided for programs in Language Development Research and Studies and for Educational Media Research and Dissemination. The latter was absorbed in Cooperative Research in fiscal year 1969. Foreign Currency Financed Research appeared in fiscal year 1961 and research connected with captioned films for the deaf 2 years later. A specific program for research and development on education of the handicapped was started in fiscal year 1964, one in vocational education research and training in fiscal year 1965, and one in library research and development in fiscal year 1967.

Since its early years, however, the Cooperative Research Act has been the Office's major source of support for extramural research. By the mid-1960's, supported activities ranged from small projects (those receiving only a few thousand dollars in support) to comprehensive research and development centers with mandates for continuous activities.

The act was expanded by title IV of the Elementary and Secondary Education Act of 1965 (Public Law 89-10) to include dissemination of information derived from research, training of personnel for educational research and research-related fields, and construction of facilities for research and research-related purposes. The 1965 provisions also permit local school systems, nonprofit agencies, private industry, and individuals to participate in supported activities. A network of educational laboratories was a specific outgrowth of 1965 amendments. Subsequent amendments have broadened the research facilities authorization and specified school finance research as one area needing attention.

Within the context of all of these authorizations, Cooperative Research remains the broadest and most flexible authorization for research and related activities for educational improvement. However, the very breadth and flexibility of the authorization has turned out to be a mixed blessing in the face of rising costs, increasing

demands for research results, and continuing budget restraints. Appropriation language has increasingly specified special allocations to be drawn from the total Cooperative Research funds available, leaving proportionately less discretionary money to respond to positive pressures for results in general. The financial crunch was further intensified in fiscal year 1970 by the unexpected absence of funds for vocational education research, leaving significant studies in that area dependent upon Cooperative Research for continued funding.

II. THE COOPERATIVE RESEARCH AUTHORIZATIONS (Public Law 83-531, as amended)

BASIC AUTHORIZATIONS

Sec. 2(a)(1). The Commissioner of Education is authorized to make grants to universities and colleges and other public or private agencies, institutions, and organizations and to individuals, for research, surveys, and demonstrations in the field of education. . . , and for the dissemination of information derived from educational research. . .and. . .to provide by contracts or jointly financed cooperative arrangements with them for the conduct of such activities. . . .

AMENDMENTS (IN ORDER OF ENACTMENT)

Educational Research Training Programs

Sec. 2(b)(1). The Commissioner is authorized to make grants to universities and colleges and other public or private agencies, institutions, and organizations to assist them in providing training in research in the field of education. . . , including the development and strengthening of training staff and curricular capability for such training, and. . .to provide by contracts or jointly financed cooperative arrangements with them for the conduct of such activities. . . . Funds available to the Commissioner. . .under this subsection may, when so authorized by the Commissioner, also be used by the recipient. . .in establishing and maintaining research traineeships, internships, personnel exchanges, and pre- and post-doctoral fellowships, and for stipends and allowances. . .for fellows and others undergoing training and their dependents. . . .

Educational Research Facilities

Sec. 4(b). Whenever the Commissioner finds that the purposes of this Act can best be achieved through the construction of a facility for research, or for research and related purposes. . . , and that such facility would be of particular value to the Nation or a region thereof as a national or regional resource for research or related purposes, he may make a grant for part or all of the cost of constructing such facility to a university, college, or other appropriate public or nonprofit private agency or institution competent to engage in the types of activity for which the facility is to be constructed, or to a combination of such agencies or institutions, or may construct or make arrangements for constructing such facility through contracts for paying part or all of the cost of construction or otherwise.

Sec. 5. The terms "construction" and "cost of construction" include (A) the construction of new buildings and the acquisition, expansion, remodeling, replacement and alteration of existing buildings, including architects' fees. . . , and (B) equipping new buildings and existing buildings, whether or not acquired, expanded, remodeled, or altered.

Research on Problems of Financing Elementary and Secondary Education

Sec. 2(a)(3). The Commissioner shall, pursuant to his authority under this Act, provide for research regarding the problems of financing elementary and secondary education. Such research shall include, but not be limited to, recommendations concerning (A) an appropriate division of responsibility among local, State, and the Federal Government in financing elementary and secondary education; (B) an appropriate balance of categorical aid, general aid, and school construction aid in the total Federal responsibility for financing elementary and secondary education; (C) new approaches to relieve the fiscal crisis now facing the schools; (D) the use of Federal revenue sharing for supporting elementary and secondary education; and (E) methods to minimize variations within and among States in per pupil expenditures for elementary and secondary education.

The Commissioner shall make a preliminary report to the Congress not later than 120 days after the date of enactment of the Elementary and Secondary Education [Act] Amendments of 1969 identifying all existing federally financed research in this area (whether authorized

Table 1.—Federal investment in educational research and related activities from legislative authorizations administered by the U. S. Office of Education: Fiscal years 1957-70[1]

(Obligations in millions of dollars)

Legislative authorizations	Fiscal years													
	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Cooperative Research Program, Public Law 83-531, as amended.														
Research Activities	1.00	2.31	2.67	3.20	3.36	4.64	6.98	11.50	15.84	49.38	57.33	65.94	68.03[2]	78.37
Research Facilities										1.31	.31	.62	18.87	11.29
Language Development, Research and Studies, Public Law 85-864, title VI			2.39	4.01	1.98	2.00	1.80	1.82	2.55	2.79	3.09	2.93	2.75	2.41
Media Research and Dissemination, Public Law 85-864, title VII			1.60	3.07	4.73	4.75	5.00	5.00	4.96	3.85	4.37	3.72	4.03[2]	[2]
Foreign Currency Financed Research, Public Law 83-480					.02	[3]	.01	.39	.22	.56	.51	.22	.09	.02
Research component of Media Services and Captioned Films, Public Law 85-905, as amended							.11	.20	.25	.30	.45	.65	1.15	1.70
Education of the Handicapped: Research and Demonstration, Public Law 88-164, as amended								1.00	2.00	5.99	8.09	10.79	13.59	13.06
Vocational Education Research and Training, Public Law 88-210, sec. 4(c)									10.26	17.14	9.97	13.00	13.49[4]	.00[5]
Library Research and Development, Public Law 89-329, title II B											3.38	2.03	2.99	2.16
Total for research activities	1.00	2.31	6.66	10.28	10.09	11.39	13.90	19.91	36.08	81.32	87.50	99.90	124.99	109.01

[1] Authorizations listed in order of funding. Two additional items with initial obligations in fiscal year 1970 have some elements which are tangentially, but not specifically, related to the research effort: Program Planning and Evaluation (Sec. 402, title IV, Public Law 90-247, as amended), $6.72 million; Collection and Dissemination of Information (Sec. 303, title III, Public Law 90-576), $1.71 million.

[2] Media research was added to Cooperative Research appropriations as a line item in 1969 and completely absorbed in 1970.

[3] Less than $0.01 million.

[4] Includes $1.99 million transferred from Public Law 90-35.

[5] The $1 million appropriated was allotted directly to the States.

SOURCE: Data through fiscal year 1966 from Grants-in-Aid and Other Financial Assistance Programs Administered by the U. S. Department of Health, Education, and Welfare, 1967 edition; data since 1967 from Budget Estimates, except Foreign Currency Financed Research, and research component of Media Services and Captioned Films, which are from program records.

under this or any other Act) and the current status of such research. Thereafter, the Commissioner shall report the results of, and recommendations with respect to, research under this paragraph as a separate and distinct part of his annual report pursuant to subsection (d).

MANAGEMENT AUTHORIZATIONS

Sec. 2(a)(2). No grant shall be made or contract or jointly financed cooperative arrangement entered into under this subsection until the Commissioner has obtained the advice and recommendations of a panel of specialists who are not employees of the Federal Government and who are competent to evaluate the proposals as to the soundness of their design, the possibilities of securing productive results, the adequacy of resources to conduct the proposed research, surveys, or demonstrations, and their relationship to other similar educational research or dissemination programs already completed or in progress.

Sec. 2(c). . . . funds available to the Commissioner for grants or contracts or jointly financed cooperative arrangements under this section shall, with the approval of the Secretary, be available for transfer to any other Federal agency for use (in accordance with an interagency agreement) by such agency (alone or in combination with funds of that agency) for purposes for which such transferred funds could be otherwise expended by

the Commissioner under the foregoing provisions of this section. . . .

Sec. 2(d). The Commissioner shall transmit to the Congress annually a report concerning the research, surveys, and demonstrations, the information disseminating activities, and the training in research initiated under this Act, the recommendations made by research specialists pursuant to subsection (a) (2), and any action taken with respect to such recommendations.

Sec. 2(e)(1). The Commissioner shall establish in the Office of Education an Advisory Council on Research and Development, consisting of 15 members appointed, without regard to the civil service laws, by the Commissioner with the approval of the Secretary of Health, Education, and Welfare. The Commissioner shall appoint one such member as Chairman. Such members shall include persons recognized as authorities in the field of educational research and development or in related fields.

(2) The Advisory Council shall advise the Commissioner with respect to matters of general policy arising in the administration of the Act.

Sec. 3. There are hereby authorized to be appropriated annually. . . such sums as the Congress determines to be necessary to carry out the purposes of section 2.

Table 2.– Cooperative Research Budget Authority, Fiscal Year 1970, by Line Item[1]

(In millions of dollars)

Items		Amounts
General Research and Development		$ 58.368
Educational Laboratories	25.106	
R&D Centers	9.800	
General Education Research Projects	23.462	
Other Special Line Items		20.686
Research Training	6.350	
Dissemination	6.740	
National Achievement Study	1.900	
Major Demonstrations	1.000	
Evaluations	2.796	
Statistical Surveys	1.900	
Total Cooperative Research Appropriations		79.054[2]

[1] Cooperative Research (Public Law 83-531) was the authority for the entire Research and Training appropriation, with the exception of a line item for Special Library Research (which is authorized by title IIB, Public Law 89-329).

[2] An additional $11.291 million for construction of research facilities was available as carry-over from fiscal year 1966 and fiscal year 1967 appropriations.

III. MANAGEMENT POLICIES AND PROCEDURES

Systematic pursuit of Cooperative Research goals requires an equitable distribution of the research investment to satisfy present and future needs—to improve current services and produce the resources for continuous future improvements. To this end, within the context of the established legislative authorization and annual budget allocations, fiscal year 1970 management procedures included the following:

1. A 15-member non-Government body appointed by the Secretary of the Department of Health, Education, and Welfare, held formal work sessions to advise the U.S. Commissioner of Education and the Associate Commissioner for Research on policy, programs, and procedures. (See appendix A, for statement of Council functions.) Advice on specific research activities also was solicited from individuals and groups on a list of about a thousand non-Government experts in education and related fields. In fiscal year 1970, as in the 2 previous years, management attempted to stretch available resources in response to the most serious mounting pressures without dangerous fragmentation of effort.

2. Staff and non-Government experts worked together systematically to converge support on the most promising combinations of research activities. Groups organized to deal with critical issues or areas needing attention attempted to clarify research missions, identify relative priorities, and intermediate and long-range goals. They analyzed currently supported activities and identified the kinds of research specifically necessary to meet current and anticipated needs. Major new directions and questions about approaches to long-range or critical problems underwent thorough review with the non-Government Research Advisory Council, the National Advisory Committee on Educational Laboratories, and various *ad hoc* groups called upon for specialized kinds of advice.

3. Almost 2,000 individual applications were reviewed by staff and non-Government experts qualified to make judgments on each activity's educational significance, soundness of design, procedure, or plan, adequacy of personnel and facilities, and economic efficiency. Continuation activities were evaluated and in some cases abridged or redirected to meet emerging needs.

4. Funding decisions represent the culmination of a positive and deliberate selection process:

a. To be eligible for support, an activity must be research or research related. Applicants whose proposed activities are innovative but have passed the research stage are redirected to sources of support other than Cooperative Research.

b. When proposed research is unwarranted duplication of completed or ongoing studies, the applicant is advised to withdraw his request before the proposal is disapproved. Similarly, applicants whose proposals lack soundness of design or procedure—no matter how lofty their goals—may be asked to withdraw their requests or to redirect or strengthen them if they are in areas needing research attention.

c. Review panels are convened to recommend allocations among components competing for available support, such as the laboratories, centers, and clearinghouses. Panels are systematically used for selection among responses to specific Requests for Proposals and among small project research competing for support administered through the regional offices. Other proposals are reviewed by qualified experts selected from the 1,000-member Field Reader Catalog, which is indexed according to areas of competence.

d. Proposals which show great promise but which do not fill the most pressing current needs may be deferred for later Office of Education consideration or applicants may withdraw them and submit them elsewhere.

5. Staff are responsible for continuous monitoring of ongoing activities and for recommending intermediate and long-range adaptations to move forward the pieces of the total research program.

6. *Current Project Information* catalogs—indexed by subject, investigator, institution, and other references—show abstracts and funding information about ongoing activities. Final reports of results are regularly fed into

the Educational Resources Information Center (ERIC) and abstracts are reported in its monthly journal, *Research in Education.*

7. During fiscal year 1970, outside evaluations were under way to strengthen Cooperative Research program components, including research training, small project research, and the ERIC clearinghouse system.

8. On July 17, 1969, the Commissioner announced plans to consolidate planning, research, evaluation, and statistical services into a single administrative unit, and October 5, 1969, the Bureau of Research officially became the National Center for Educational Research and Development (NCERD). The following May (1970), dissemination activities formerly administered as a division of NCERD were given separate identity as the National Center for Educational Communication.

Cooperative Research Management Summary Data[1]

New applications processed		1,868
Activities receiving support:		
New activities funded	496	
Continuations supported	274	
	770	
Activities ongoing in fiscal year 1970 with latest support in fiscal year 1969	343	
Ongoing activities		1,113

[1] Does not include separately processed items funded out of the Statistical Surveys budget line.

IV. DEFINITIONS AND DISTINCTIONS

MAJOR CONTINUATION PROGRAMS

Long-range, programmatic activities concentrate on carefully defined missions or services and build on accumulating experiences. However, whenever a program component is sluggish in fulfilling its mission, or the mission itself ceases to be of major importance, support may be phased out for application elsewhere.

Laboratories and Centers

Two kinds of large-scale research and development activities received support during fiscal year 1970: Research and development (R&D) centers and educational laboratories. The centers are at institutions selected for their staff strengths and commitment to problem-oriented research and initial development (see list in appendix B). The laboratories are independent autonomous organizations, established through regional initiative following amendment of Cooperative Research in 1965 (see list in appendix C). They are heavily oriented toward final development and adaptation of materials or techniques for direct use in the schools. In practice, however, the distinction is by no means precise. Centers and laboratories coordinate their efforts, often dividing responsibilities according to staff competencies in order to reach mutual goals.

Comprehensive research facilities are being acquired or constructed, and equipped, to accommodate high quality research and development at educational laboratories and R&D centers. Fiscal year 1970 facilities grants to three laboratories bring to seven the number of such sites for which Cooperative Research funds have been committed.

Training and Dissemination Services

Continuity is important in providing efficient services in research training and the ERIC system. Training depends upon program development and maintenance of qualified staffs. Efficient operation of ERIC clearinghouses requires extensive materials collection and appropriate staffs to analyze holdings, assist users, and perform other dissemination services.

PROJECTS AND SPECIAL ALLOCATIONS

Projects are prescribed time and cost activities in search of precisely defined goals. Shifting support to new projects provides flexibility to change from one area of investigation to another. At the same time, allocations of portions of available project support to specific areas can assure a predetermined level of effort to accomplish an identified purpose.

In Cooperative Research, some allocations are suggested in appropriation language through special budget line items—such as for the National Achievement Study authorized by the 90th Congress, or for statistical surveys and evaluations. With the concurrence of the Research Advisory Council, other allocations out of the general education research appropriation are made to specified program areas—such as unsolicited basic research and the Regional Research Program. In fiscal year 1970, the latter program was composed primarily of projects receiving under $10,000 in support and administered through the Office of Education Regional Offices.

As pressures for available funds have increased, the National Center for Research and Development and its advisory groups have moved steadily toward tentative allocations to specific substantive or program areas in order to avoid fragmentation of effort. In addition, staff have systematically worked to coordinate activities receiving project support and those receiving programmatic support to assure the most productive results from the total investment.

Table 3.–Summary of Cooperative Research Obligations: Fiscal Year 1970[1]

(In millions of dollars)

Budget Authority Line Item	Obligations	Number of Activities
Research and Development	58.072	518
Educational Laboratories	25.106	15
R&D Center-Type Activities	9.798	13
Basic and Applied Research Projects	23.168	490
Other Line Items	20.297	284
Research Training Programs	6.325	107
Dissemination Activities	6.574	58
National Achievement Study	1.900[2]	1
Major Demonstrations (Anacostia)	1.000	1
Evaluation Studies	2.598	85
Statistical Studies	1.900	32
Total from FY 1970 appropriations	78.369	802
Obligations from facilities appropriations carried over from FY 1966 and FY 1967	11.291	3
Total obligations in FY 1970	89.660	805

[1] Includes all of Research and Training appropriation, except Special Library Research, which is authorized by title IIB, P.L. 89-329.

[2] By special arrangement, $0.5 million from the General Education (Project) Research budget line was applied to the National Achievement project to bring the annual assessment up to its planned schedule.

V. HIGHLIGHTS OF GENERAL R&D ACCOMPLISHMENTS

Under the general provisions for research and development to improve education, the total Cooperative Research investments in the laboratories, centers, and individual research projects were applied during fiscal year 1970 in the amounts specified in table 4. To give an overview of what the public is getting from these investments, examples of project and program accomplishments are grouped together in this section under convenient headings. As in education itself, overlap and inter-relatedness are evidenced in the treatment of these accomplishments. Attention to the disadvantaged and minority groups, for example, was a factor in much of the research and development, reflecting the current national concern for improving educational opportunities for those who suffer social and financial handicaps.

The examples also reflect the various stages of activities receiving support in fiscal year 1970. For example, for laboratory and center programs, which are concentrated on continuous research and development, accomplishments in fiscal year 1970 represent stages in progress toward long-range goals. For projects, which are more finite, accomplishments for the year show the results of some projects which were started in earlier years and the objectives of others which were newly funded.

In keeping with the requirements of section 809 of Public Law 91-230, the report on school finance research is provided in a separate and distinct section. Also, because the Regional Research Program's activities are funded from general authorizations for research and development, a separate analysis of the Regional Research Program is provided. However, examples from regional project research are also scattered throughout the section under appropriate subject areas.

Table 4.—Cooperative Research Investments in Laboratories, Centers, and R&D Projects in Specified Areas: Fiscal Year 1970

(In millions of dollars)

Area	Investments		
	Labs & Centers	Project Research	Totals
Fundamental Research	.942	6.020	6.962
Early Childhood Education	8.942	2.077	11.019
Reading	3.320	.703	4.023
Organization, Administration, Finance	5.140	2.215	7.355
Vocational Education*	——	4.270	4.270
Higher Education	1.865	.435	2.300
Teacher Education	4.183	.335	4.518
Quality of Life	.750	4.290	5.040
Other	9.762	2.323	12.085
Totals	34.904	22.668	57.572

* Vocational education research activities (two centers, an ERIC clearinghouse, and about 50 projects started under authorizations from Part C, P. L. 88-210) were funded out of the general education (project) research budget line of Cooperative Research during FY 1970. From the $4.270 million project support shown for vocational education in this table, $1.560 million went to the two vocational education R&D centers.

BASIC RESEARCH

Basic research is oriented toward *knowing* or understanding something, as contrasted with being able to *do* or develop something. In the labs and centers, the relatively small proportion of basic research was used primarily to produce knowledge needed for their large-scale development activities. Of the investments in basic research projects, about $2 million was used for 43 projects selected from among 300 proposals submitted to the Unsolicited Basic Research Program. Selection was based on recommendations by nine-member panels of experts in affective (feeling), cognitive (knowing), and sociological areas. About $1 million was used for 16 projects in a program administered by the National Research Council's Committee on Basic Research, cosponsored by the National Academy of Science and the National Academy of Education. Another $1 million was used for continuation costs of basic research studies started in previous years. The remainder was used for basic studies in arts and humanities, higher education, vocational education, and other areas.

What personal factors affect learning?

What causes one boy with average intelligence to achieve more than another with greater cognitive or intellective ability? And what causes one girl to overcome her awkwardness and perform better than another with superior sensorimotor skills? A project at Texas Christian University was started in January 1970 to conduct an intensive analysis of the Personality-Emotion-Motivation (PEM) domain. Groups of scholars and scientists have been collaborating to clarify the diversity of definitions, theories, and research—to bring order out of the apparent chaos surrounding this illusive area sometimes known as the affective domain.

At the University of Illinois, investigators are studying the effects of personality, motivation, and reward on the learning of high school students. A project at Peabody College, Nashville, Tenn. is developing ways of measuring values of, and identifying value dissonance among, elementary personnel, pupils, and parents. And one at the University of Hawaii is investigating differing values among social, cultural, and occupational groups and school personnel, as a basis for interpreting individual and community expectations and determining effective school programs. Using data already collected from 200 black children, Washington University (St. Louis, Mo.) is developing a test to predict motivation independent of intelligence. A project at Mills College (Oakland, Calif.) is identifying factors which lead some children to develop excessive shyness or fears which later impede learning.

Other studies related to the affective domain have been approved to (1) study different motives and aptitudes for learning in underachievers, dropouts, and those who are successful in school; (2) develop a value measure which is nonverbal and culture fair, to be used with first, second, and third graders, and adults with language or other problems; (3) investigate personality components associated with the occupational aspirations of black and white college women; and (4) study the effects of anxiety on computer-assisted learning.

How do children learn?

Numerous basic studies are answering important questions about how children learn. For example, a project at the University of Illinois (Urbana) is analyzing how children between the ages of 4 and 6 combine their existing knowledge with what they can observe or do in order to come up with new knowledge. The objective is to find out more about how differences in background and experience influence the way children think and what kinds of reasoning abilities they bring to the task.

Whatever parents and educators discover about how children learn to distinguish relationships (e.g.: the same as, and greater or smaller than) will help them devise situations which will increase learning efficiency. A researcher at San Jose State College (California) is using a variety of diagrams and pictures to study the way children in nursery schools and day care centers discriminate such differences.

Questions also need to be answered about ways to determine a child's predisposition toward tasks and social groups. In other words, how does one predict whether a child will be intrigued by the activity or whether he will tackle the task just because others in his social group are doing it? Also, what predispositions are associated with creativity, ingenuity, and originality of response? These and related matters are being investigated by a project at the University of California, Los Angeles.

Does a child's static balance ability or equilibrium control have a definite relationship to his school readiness? And, concurrently, does remedial training of static balance ability in educationally handicapped children help them overcome potential learning difficulties? A researcher at Stanford University School of Medicine is trying to answer these questions with support for a small project entitled "Developmental Patterns of Static Balance Ability and their Relationship to Cognitive School Readiness."

EARLY CHILDHOOD EDUCATION

Research has suggested that half of all growth in human intelligence takes place between birth and age 4, and another 30 percent occurs between the ages of 4 and 8. In fiscal year 1970, approximately $11 million in Cooperative Research support was used to improve early childhood education—for all children, and particularly for deprived children from inner city and rural areas. Education of young children was a major component of programs at 11 educational laboratories and 2 R&D centers. In addition, a group of universities used about $1.5 million for organized research through a National Program on Early Childhood Education coordinated at the Central Midwestern Regional Educational Laboratory (CEMREL), St. Louis, Mo. Of the $2 million used for other projects in the area of early childhood education, the largest and most significant investment was with Children's Television Workshop for the production of the award-winning preschool television program, "Sesame Street." (See next section).

The Southwest Educational Development Laboratory, Austin, Tex., has been developing curriculum materials and teacher instructions for complete programs for four groups of children, ages 2 to 5: experientially deprived rural children, disadvantaged urban children, Spanish-speaking inner-city children, and Spanish-speaking children of migrant farm workers. Each curriculum stresses communication skills and the understanding, listening, and speaking skills that precede reading and writing. A bilingual approach for the Spanish-speaking children seeks to develop equal proficiency in both English and Spanish by age 6. Besides instructional materials, the program includes components for training teachers, a film on bilingual teaching, and packages on parent-school-community involvement.

The St. Louis Laboratory (CEMREL) is seeking to find out what kind of early childhood education is most effective with children who are severly disturbed, hyperactive, and over-aggressive, or too shy and withdrawn to talk normally. In its Learning Disabilities Program, materials and strategies are based on use of a reward (reinforcement) system which gives the child tokens to be exchanged for items or activities the child values. Learning packages using reinforcement techniques were developed for teachers, therapists, and parents, and tested in practical school settings in St. Louis, Chattanooga, and Nashville.

A Primary Education Project (PEP) is analyzing what happens when children 3 to 6 years old take responsibility for pacing their own learning experiences. PEP is a joint effort of the Learning Research and Development Center (Pittsburgh) and the Pittsburgh public schools. Sequences of materials and learning experiences have been worked out so that each child uses his own initiative in mastering basic skills. In a controlled environment where toys become learning tools, children learn to count, to make comparisons, to match and group things, to identify words. Praise and rewards for performance encourage the children to be self-sufficient in selecting their own tasks and checking whether or not they are completed satisfactorily. The children readily tell a visitor who is the "smartest kid" in the class, but feel unthreatened by competition.

The University of Chicago Graduate School of Education has concluded an extensive longitudinal study of the effects of home and maternal influences on learning by urban black preschool children. In the earlier phase, information was gathered about specific elements of behavior and home environment, and mothers were viewed as teachers. Mother-child pairs were from three socioeconomic levels: middle class, skilled working class, and unskilled working class. Conduct and academic achievement were found to be significantly different aspects of educability, with "good conduct" related to a feeling of responsibility for success or failure. The child who did well in school was likely to have a warm, supportive mother who stressed personal control but avoided imperative commands, and a girl's school performance (including reading readiness) was more likely to be influenced by maternal variables than a boy's. Father-absent children tended to be more aimless and to prefer immediate over delayed reinforcement.

The Chicago study generally concluded that refusal to learn is related to alienation from the task, possibly growing out of reaction to early parent-child socialization practices. Once a child's refusal to learn becomes "functionally fixed," the problem is to remedy his reaction tendencies through resocialization and other intervention procedures.

Whereas the early education of slum children may be affected by overcrowded living conditions, that of rural children may be influenced by relative isolation. The Appalachia Educational Laboratory, Charleston, W. Va., has been developing and demonstrating home-oriented preschool education, using television lessons, home visitations, and mobile classrooms to reach 3-, 4-, and 5-year-olds. The system is designed primarily for small rural school districts and may be conducted cooperatively by a group of school systems. The program consists of 30-minute daily television lessons received in the home, weekly home visits by paraprofessionals to counsel with parents and deliver materials to be used by parents and children, and weekly group instruction in a

mobile classroom taken near the home for the convenience of parents and small children. It is focused toward the needs of Appalachian children, eliminates transporting large numbers of very young children, saves classroom space and staff time, and, most important, involves parents in the nurture and development of children prior to school entry.

The Southeastern Educational Laboratory, Atlanta, field-tested a somewhat different approach, using six readimobile units to serve children who could not otherwise obtain kindergarten or Head Start experiences. Each readimobile was equipped with carefully selected films, filmstrips, story books, drawing paper, and creative playthings, and operated by trained staff. Groups of children in isolated areas in five States were exposed to weekly learning sessions lasting approximately 2 hours at each stop.

Effective June 1, 1970, the Central Midwestern Regional Educational Laboratory (St. Louis) became headquarters for coordination of work supported as the National Program on Early Childhood Education (NPECE). Program components are at centers located at the University of Arizona (Tucson), University of Chicago, Cornell University (Ithaca), University of Kansas (Lawrence), University of Oregon (Eugene), George Peabody College (Nashville), and Syracuse University.

A program developed by the Tucson component of NPECE has furnished a model to emphasize language skills in Follow Through classrooms across the country. The program, originally developed with Mexican-American youngsters but also found to be effective with all youngsters, has been based on the idea that children learn more by "doing" than by "hearing about." The Oregon center, newest of the components, focuses on early education of the handicapped child to help him develop compensating skills.

Peabody's Demonstration and Research Center for Early Education (DARCEE) has been developing and testing a training program to help low-income mothers become more effective educational agents for their children. The training involves improving the mother's general ability in planning and organizing her life, developing her ability to serve as an effective teacher for her child, and providing her with adequate knowledge of the steps involved in enabling her child to succeed in school. Well over 200 families have served as DARCEE test subjects, a number that has allowed both careful testing and demonstration and permits followup studies on the children as they enter primary school. The method seems to be cost-effective and easily replicable.

By the summer of 1970, the Center for the Study of Evaluation (UCLA) had developed a compendium of goals for early childhood education and started evaluating related tests and measures. The compendium is based on a comprehensive search of stated objectives in programs and theories, and the evaluation work is expected to have a major impact in assessing ongoing early childhood programs.

SESAME STREET

"Sesame Street," the award-winning Children's Television Workshop program, was designed to stimulate intellectual and social growth of the Nation's 12 million preschool children, with the disadvantaged 4-year-old as the primary target. The Workshop received $1,555,000 from Cooperative Research in fiscal year 1970 to launch this program. Support also was provided by other Government agencies and foundations.

Widely acclaimed as a revolution in television, Sesame Street in its first year became TV's most honored show, winning 22 awards, including three Emmys (for series, writing, and music) and the Prix Jeunesse International award. The program was aired daily, Monday through Friday, for 26 weeks over 215 stations, some as far away as Guam and American Samoa. In some localities, the program was shown twice daily and all five weekly segments were rebroadcast on Saturday. Nielsen ratings indicate that the program was viewed by about 6 million children during its first year.

Preliminary test results indicated that children who watched Sesame Street gained more than twice as much as nonviewers in recognizing letters and simple geometric forms and sorting out objects unlike others in a set. Besides helping children find that learning can be fun, the program has great potential for building parental interest in the learning activities of their children.

Sesame Street has been called television's most carefully researched program. Prior to production, highly experienced television producers, child psychologists, educators, and researchers met to determine instructional goals. The production staff used repetition, humor, and fast-paced segments typical of children's commercial television to create entertaining programs which foster development of basic knowledge and skills. Among the background research for program development was a study of the TV viewing behavior of preschool children conducted by the Teaching Research Division of the Oregon System of Higher Education. During production, continuous research provided feedback for effective production strategies and measured program impact on a nationwide sample of preschoolers.

Before the end of the first season, steps were being taken to make the program available in Canada, Australia, New Zealand, and other countries, and over the U.S. Armed Forces Radio and Television Network. A second series will build upon experiences from the first and expand the outreach of television for reaching and teaching young children.

READING

In recognition that reading is the key to other learning, NCERD invested about $4 million in Cooperative Research support to develop materials and techniques to insure that every child will be able to read so well by age 10 that he later will become a competent adult reader. This includes about $700,000 in project research and $3.3 million in programs in laboratories, centers, and an Educational Resources Information Center clearinghouse on reading. Specific programs designed to produce improvements in helping children develop their right to read were operational in eight laboratories, and reading was part of other programs in five laboratories and three centers. In some instances, reading was part of the early childhood education program; in others, it was part of a communications program for disadvantaged or minority children.

The First Year Communications Skills Program (Los Angeles Laboratory) teaches kindergarten students to read approximately 100 basic words, to sound out and read similar words, and to demonstrate comprehension of their reading. A wide variety of printed and illustrated materials, plus complete teacher guides and student tutor training materials, were completed and subjected to rigorous field tests during the 1969-70 school year. By the fall of 1970, over 33,000 children were participating in the program and steps were being taken to expand the program to include the primary grades.

The Portland Laboratory's Alaskan Readers are part of a language development system for Eskimo children in grades 1 to 3, building on the culture and vocabulary of the children. Self-paced readers delay introducing irregularities in English until some confidence in reading is gained. The Readers have been programed into 12 systematically interrelated levels, each field tested in its turn. By the end of fiscal year 1970, about 75 villages were using the eight levels developed thus far.

Other laboratory and center reading efforts include the Wisconsin Center's Ecological Readers which are supplemented by audiovisual materials to help involve poor readers in current problems; the Pittsburgh Center's multitracked reading system (Steppingstones to Reading), which features color-coding, prompting, special type faces, and immediate feedback; and the Individually Prescribed Instruction reading instruction developed and tested by the Pittsburgh Center and Philadelphia laboratory. Also, the UCLA Center on the Study of Evaluation has developed a widely applicable objective-based evaluation system for assessing the effectiveness of reading instruction from preschool through grade 12.

During fiscal year 1970, some progress also was made in developing tutorial programs. For example, an experimental effort to enlist volunteers in combatting serious reading problems of inner-city children was undertaken by the Education Progress Center of the Archdiocese of San Francisco. Cooperative Research support was used to help researchers and schoolmen design, operate, and evaluate a special 5-week summer reading program for about 550 minority children from public and private schools in San Francisco and Los Angeles. Teachers in the program were volunteers with experience in teaching reading to disadvantaged children.

Toward the end of the fiscal year, contracts totalling $573,000 were awarded for three basic projects to help converge on attaining the Nation's Right-to-Read goal. The largest of these was to Educational Testing Service (ETS) to develop a procedure for assessing how well adults meet reading levels required to function in our society. Rutgers University received a contract to search scientific literature and identify all theoretical models of the phenomena involved in reading, thus providing information needed to understand relationships between the reading process and the development of other language skills. The third of these major contracts was to the Western Division of ETS for a status survey, to determine the extent and distribution of the national reading problem, the use pattern of instructional materials and practices, and the nature and extent of current teacher training for reading.

In the meantime, previous and current reading research findings were synthesized, interpreted, and made available through a publication called *Treating Reading Difficulties—The Role of the Principal, Teacher, Specialists, and Administrator* (OE 30026). Cooperative Research support also was provided for the National Reading Council and for other activities related to the President's announced drive against illiteracy and reading deficiency.

QUALITY OF LIFE

Area	Amount (in millions)
Arts and Humanities Program	
New and Continuation Projects	$ .9
Programs in Laboratories	.8
Transfers to National Foundation on the Arts and Humanities	1.8
Environmental Studies	.8
Students and Social Change	.6
Other Quality-of-Life Studies	.1
	5.0

Arts and humanities projects started in fiscal year 1970 were concerned primarily with relevant educational experiences for all children at the preschool, elementary, and secondary levels. Continuation support was provided to a number of activities, including the Los Angeles Laboratory Theater Project and a research study on the effectiveness of laboratory theater as an educational activity.

Half of the $1.8 million transfer to the National Foundation on the Arts and Humanities was used by the National Endowment for the Arts to expand the artists-in-schools projects administered by State art councils; the other half was used by the National Endowment for the Humanities for development projects in communications and other humanizing areas.

The Aesthetic Education Program at the Central Midwestern Educational Laboratory (CEMREL) continued to develop prototype packages of materials and guidelines to help provide students with artistic expression skills.

One of the most promising projects supported during fiscal year 1970 was with the American Institutes for Research (Palo Alto, Calif.) to evaluate the potential of films in improving the self-image of minority group children.

More than $600,000 of the investment in environmental studies went to the Corporation for Public Broadcasting to undertake establishment of a Public Broadcasting Environmental Center. The objective was to present issues and their effect on the quality of life to the general public and selected target audiences to help reach more effective solutions in the public interest as a result of improved levels of understanding, and to measure progress toward attainment of those objectives. One subcontract, through the Federation of Rocky Mountain States, is working toward an eight State effort to improve and coordinate regional educational television programing on the environment.

The largest and most comprehensive investments in studies on students and social change went to the University of Michigan and the University of Massachusetts, the former for work toward alleviating crises in secondary schools and the latter to develop core components for effective student participation in constructive changes in higher education.

A comprehensive course on "The Use, Misuse, and Abuse of Drugs and Narcotics" was produced by the Laredo, Tex., school system with a $9,000 Cooperative Research grant from the Regional Research Program. The money was used for planning sessions, workshops, and collection of films, transparencies, books, and periodicals on drugs. Twenty-four local teachers worked with consultants, physicians, pharmacists, city officials, and law enforcement officers to produce an unusual course which can be woven into other classes in grades 1 to 12. The program has been featured on CBS News and the Today Show, tested in schools throughout Texas, and will soon be available through commercial publishers.

HIGHER EDUCATION

The major investments in higher education research were in ongoing programs at the research and development center at the University of California, Berkeley; the educational laboratory at Durham, N.C.; and the Educational Resources Information Center Clearinghouse at George Washington University, Washington, D.C. Some of the work at the UCLA Center for Evaluation also was at the higher education level. New and continuation projects concerned with improving higher education included some vocational education studies at the junior college level and some basic research on post high school students, as well as projects directly classified as higher education studies.

Building on its previous work, the Berkeley Center for Research and Development in Higher Education has redirected its emphasis to programs for the "new" college student. These are students who, by various criteria, were in the "lower half" of the post high school population and those who, for one reason or another, are disenchanted with the *status quo* of post high school education. The Center has identified three major tasks related to its new emphasis: (1) learning more about the characteristics of the "new" students, (2) ascertaining how participation, process, and structure in higher education can increase the relevance of programs for these students, and (3) developing models for educational programs which will provide the necessary opportunities for these students to realize their potential.

The Center's findings and recommendations on academic reform based on reassessment of courses, cur-

riculum, methods of instruction, and governance needed to serve an increasingly diverse population appear in Higher Education by Design: The Sociology of Planning. The authors, E. Palola, T. Lehmann, and W. Blischke, drew data from 600 interviews with State officials, legislators, State coordinators of higher education, and faculty and administrators of 81 public and private institutions, from junior colleges to comprehensive universities, in a 3-year study of statewide planning in Florida, Illinois, New York, and California.

In March, 1970, the Center sponsored a national invitational workshop on innovation and experimentation in higher education, emphasizing forms of inclusive innovation (the cluster college concept, federated colleges, interior or minicolleges, and living-learning house plans) and related research findings.

The Regional Educational Laboratory for the Carolinas and Virginia continued its efforts to help college staff improve instruction, planning, and decision making. In a series of workshops for presidents and educational development officers of junior colleges, one strategy was to present the officials with simulated problems for which they had to make decisions. The controversies included a list of demands from black students, a poem with four-letter words published in the student newspaper, and a protest by townspeople over a controversial speaker on the campus. Panels reviewed the type of information upon which decisions were based, the extent to which various campus and community groups were involved, and the possible effects of the decisions.

Junior college and other postsecondary students may also benefit from Aerospace Education Foundation (Washington, D.C.) findings related to civilian use of Air Force curriculums for medical service specialists, aircraft mechanics, and electronics engineers, as well as from other career-related studies in the general area of vocational education research.

The Western Interstate Commission for Higher Education (WICHE, Boulder, Colo.) received Cooperative Research support in fiscal year 1970 to continue its large-scale effort to design and develop an information system and network facilities for better planning and management in colleges, universities, and higher education agencies. Initially, major institutions in 13 Western States, New York, and Illinois were committed to common basic data elements and management models in their planning activities. The system is now being expanded to other States.

The University of Pittsburgh received continuation support for its efforts to help universities determine priorities and approaches to improve their roles in alleviating urban problems. This work was a companion to studies funded the previous year with the Bureau of Social Science Research (Washington, D.C.) on university-community relationships and with Federal City College on community college relationships in urban education.

Working with a consortium grant as seed money, 33 Oklahoma colleges and universities pooled their efforts to launch permanent, sustaining research activities. Culminating the third and last year of this activity, the program became the catalyst for $1.5 million in public and private funds for the first stage of a statewide microwave instruction and data network linking major industrial systems to institutions of higher education. At the outset of this project, Oklahoma had two university-based directors of research. Following workshops, developmental seminars, pilot research studies, and individual laboratory experiences, the State's colleges and universities had 17 directors of research, and many professors were receiving research grants from other Federal agencies and private sources.

Activities related to higher education instructional practices included a curriculum revision project to support institutional change in 13 colleges attended predominantly by black students. Cooperative Research support for continuing this 3-year effort was provided through the Institute for Services to Education, Washington, D. C.

The Carnegie Commission on the Future of Higher Education received continuation support for the final segment of its national survey of higher education as a basis for recommendations on public policy.

VOCATIONAL EDUCATION

In fiscal year 1970, the $1.1 million appropriated for research and training under part C of the Vocational Education Act of 1963 (as amended) was allocated directly to the States, and funds provided under Cooperative Research were used to continue approximately 50 significant activities previously funded under the act. To sustain the forward momentum of these activities with a minimum of sacrifice from the Cooperative Research appropriation, every activity scheduled for continuation support was rigorously re-evaluated and only the most critical elements of ongoing projects were retained. Except for the two vocational education research and development centers and a few projects which were nearing completion, most of the supported activities were efforts to improve curriculums and practices for emerging new careers, particularly careers to meet the demands of modern technology on the one hand and

social crises related to rural and innercity poverty on the other. Some of the activities included in other categories of this report also had elements concerned with career choices and general preparation for satisfying life work.

In municipal government, the Institute for Local Self Government in Berkeley worked with junior colleges and local government agencies in California to make job analyses, identify job ladders, restructure positions to provide upward mobility, and develop appropriate programs for seven "career ladder" occupations, including civil engineer, inspection service, and recreation director. By the fall of 1970, materials were in use by about 5,000 students in 50 community colleges. Curriculum guides and information about the programs have been distributed nationally by the American Association of Junior Colleges to help in preparation of paraprofessionals urgently needed for public service functions.

In judicial administration, the New Careers Development Organization in Oakland (Calif.) has been working on job descriptions and curriculums for probation workers. Job descriptions, career ladders, and curriculums are being tested in five schools (both secondary and postsecondary) and with five employing agencies.

In social work, the Chicago YMCA has developed materials for eight social work areas, including job descriptions and core curriculums at the junior college level. The next step was to develop and test detailed curriculums for both secondary and postsecondary levels suitable for the identified jobs. Four junior colleges and two employing agencies have been cooperating.

In recreation services for the ill, disabled, and aged, the New York University School of Education has identified career ladders, prepared the requisite curriculums, and started testing programs. Twenty-two employing agencies have been involved in the research and three in field testing.

An aviation mechanics technician program, developed and field tested by the University of California at Los Angeles, has resulted in the Federal Aviation Administration's revision of FAR Regulation 147, setting forth standards and guidelines for operating aviation maintenance technician schools. These new criteria for official FAA accreditation of such schools in this country have triggered requests for information from many foreign countries.

Instructional materials in vocational horticulture developed at Pennsylvania State University are already being used in more than 300 high schools throughout the Nation. Other careers receiving attention during fiscal year 1970 included concrete technology (Portland Cement Association, Chicago); allied health professions (UCLA); and emerging careers in nuclear medical, electro-mechanical, bio-medical equipment, and laser and electro-optical technology (Technical Education Research Center, Cambridge, Mass.).

The Aerospace Education Foundation used six Utah schools, ranging from high school to a 4-year college, as test sites for using Air Force instructional materials for civilian education in electronics, aircraft mechanics, and nurses aide (medical service specialist). Student performance was as good or better with the Air Force techniques and materials as with conventional techniques and materials. As a result, the Air Force curriculums have been integrated into regular programs in the test schools and in other schools as well.

A new junior high school industrial technology curriculum, being developed and tested by the Ohio State University Research Foundation, uses laboratory experiences to develop cognitive and motor skills, provide practical learning experiences, and instill respect for the dignity of work. The industrial technology curriculum is concerned with two broad systems—construction and manufacture—through which man shapes and reshapes his environment. By the end of fiscal year 1970, a textbook, instructors guide, and student manual for the first year's course, "The World of Construction," were being used by over 14,000 students in junior high schools to help them develop knowledges and skills used in building roads, dams, utility networks, private residences, and public buildings. A second text, guide, and manual—"The World of Manufacturing"—focuses on management, personnel, and production techniques in a factory or plant. Upon completion of this later phase, it is anticipated that rapid adoptions throughout the country will help to broaden the outlook of young students toward occupations open to them.

Continuous and indepth attention to improvements in vocational education is provided through support for two comprehensive research and development centers, one at Ohio State University, Columbus, and the other at North Carolina State University at Raleigh.

Goals of the North Carolina Center are to improve the accessibility of appropriate occupational education, facilitate coordination between occupational education and other programs, and assess the effectiveness of occupational education systems. The Center works especially on solutions to special vocational education problems encountered in southern States.

The Ohio Center provides continuing reappraisal of the role and function of vocational and technical education in society and stimulates and strengthens State, regional, and other programs to solve pressing vocational and technical education problems. It also upgrades vocational education leadership through programs for

advanced study and inservice education, provides a national information retrieval, storage, and dissemination system for vocational and technical education, and furnishes a variety of consultant services. In addition, the center carries on an organized research and development program and works closely with State Research Coordinating Units in vocational education.

One of the special contributions of the Ohio Center has been a system for State evaluation of vocational and technical education, to facilitate program planning and decisionmaking capability. The system includes a comprehensive guide and the necessary evaluation instruments needed for State divisions of vocational and technical education to meet State and Federal accountability requirements. The Center also developed and pilot tested guidelines and operating procedures for State vocational-technical education dissemination systems to bring research findings to the classroom.

TEACHER EDUCATION

Intensive programs to improve teaching and teacher education were being carried out during fiscal year 1970 at the Austin (Tex.) Research and Development Center for Teacher Education, the Stanford (Calif.) Center for Research and Development in Teaching, and at educational laboratories in Berkeley, Kansas City, Portland, and Durham. Project research in this specific area was concerned largely with application of components from the Model Teacher Education Programs developed in fiscal year 1968 and tested for feasibility in fiscal year 1969. Teacher education elements also were included in many of the research activities falling in other classifications of this report, thus reflecting inter-relationships between teaching, learning, curriculum content, and school administration.

Pursuing its efforts to individualize teacher education as a basis for helping teacher candidates work with individualized student learning, the Austin center continued to produce instructional modules which could be used for personalized and self-paced progress toward efficiency. All modules employ a variety of media, instructional activities, and assessment techniques, and provide individualized self-paced study plans. They may be used as a system or as independent study units in specific teaching areas. By June 1970, the Center was being flooded with requests for team teaching modules based on behavioral objectives.

Microteaching and minicourses, used together or separately, help student and veteran teachers manage their own self-improvement. Microteaching, a technique developed by the Stanford R&D Center, uses videotapes for self-evaluation of teaching competencies, thus avoiding the traditional supervisor criticism which produces defensive reactions. The teacher, or teacher candidate, presents a 5- to 10-minute lesson to a small group of students, views a videotape of her performance, notes areas needing improvement, and then revises the lesson and reviews a second performance.

The Far West Laboratory for Educational Research and Development in Berkeley used microteaching as a basis for developing instructional packages, known as minicourses, intended primarily for inservice training but found effective also with teacher candidates. Each minicourse provides instructional materials for a teacher to practice a specific skill. These self-contained minicourses are rigorously tested before being offered for commercial distribution. By the fall of 1970, the videotape techniques of microteaching and minicourses were being used in more than half of all colleges accredited for teacher education programs, as well as for self-instruction by experienced teachers.

The special approach for training teachers of the disadvantaged, developed by the Mid-Continent Regional Educational Laboratory in Kansas City, won an award from the American Association of Colleges for Teacher Education. This 16-week Cooperative Urban Teacher Education Program provides students from small liberal arts colleges with realistic training for innercity teaching. Specialists in teaching, sociology, and mental health direct seminars, and students work with community representatives to gain greater insights into the lives of innercity students. In the first year, 45 of the 50 enrollees went on to teach in innercity schools. By the fall of 1970, the *User's Manual* for McREL's innercity school staffing pattern was being used in Kansas City, Oklahoma City, Omaha, and Wichita school systems. In another program, McREL is training teachers to promote student self-directed learning, beginning with a program to develop inquiry behavior in biology students at the secondary level.

To improve the skills needed to teach in all content areas, the Northwest Regional Educational Laboratory in Portland has described 42 classroom processes in which teacher competencies can be improved and was developing and testing instructional systems for 12 of them during fiscal year 1970. Teachers learn to increase students' academic motivation and train older students to help younger ones. They learn questioning strategies to encourage inquiry and productive thinking. They learn ways to promote student ability to process data, form concepts, and apply principles. Analyses of what goes on in the classroom are used to help teachers assess and improve their own classroom behavior. The Laboratory has prepared manuals, slides and audiotapes, films,

and self-evaluation guides for these courses and has trained educators in colleges, state education departments, and schools to conduct related inservice programs.

Teacher training programs throughout the country are being reformed as a result of accomplishments from a cluster of activities known as the Teacher Education Development Project started in fiscal year 1968. This major effort to completely restructure teacher education first resulted in ten models or sets of specifications for new teacher training programs. These were subjected to eight rigorous feasibility studies in major universities and emerging institutions. The instructional, fiscal, management, and community resources necessary to implement such forwardlooking programs were determined through sophisticated analyses. Major institutions participating in either the design or the feasibility testing were Florida State University, Michigan State University, Oregon College of Education, Syracuse University, University of Georgia, University of Massachusetts, University of Toledo, University of Wisconsin, University of Pittsburgh, Teachers College of Columbia University, and the Northwest Regional Educational Laboratory.

During fiscal year 1970, the American Association of Colleges for Teacher Education and others held dissemination conferences at Philadelphia, Atlanta, Kansas City, San Jose (Calif.), Chicago, and Salt Lake City, to bring these models to the attention of all institutions engaged in teacher preparation. Support was also provided to 10 emerging institutions in the Southeast, nine of them attended predominantly by Negroes, to study how the models could be adapted to the needs and resources of smaller colleges. Through a contract with Syracuse University, seven new Teacher Corps programs have been coordinating their development of competency-based teacher training, based on the models. Some of the basic themes of the models program have also been included in the Teacher Corps guidelines. On the whole, models and related literature and feasibility studies provide an enormous guide through which future program developments can proceed, particularly in light of Education Professions Development Act provisions to improve training.

To improve instruction at the higher education level, particularly in junior and community colleges, the Regional Educational Laboratory of the Carolinas and Virginia in Durham worked with college staffs to design a learning-oriented instructional system based on behavioral objectives. Other laboratory efforts to improve teaching included work on teaching creative thinking (Center for Urban Education, New York City), use of resource teams to promote effective instructional innovation in school systems serving the disadvantaged (Educational Development Center, Newton, Mass.), and management of behaviorally engineered classrooms (Upper Midwest Regional Educational Laboratory, Minneapolis).

INSTRUCTIONAL SYSTEMS

Development of improved instructional systems generally requires large-scale efforts which cut across the areas of curriculum, teacher education, media, and organization and administration. As a general rule, small explorations of promising new approaches are followed by continuous and cumulative development, testing, and refinement over several years, at the same time drawing upon information available from basic and applied research projects.

The Multiunit Elementary School is the organizational component for the Individually Guided Education system developed by the Wisconsin Research and Development Center for Cognitive Learning. The system replaces selfcontained classrooms with a low-cost extension of team teaching, continuous progress according to individual student needs, flexible use of resources, and differentiated instructional roles. Each unit consists of 75 to 150 children, a unit leader, three to five teachers, and one or two teacher aides. The unit leaders and the principal make up an Instructional Improvement Committee to plan and manage flexible use of time, space, and personnel. Staff of the instructional units plan and coordinate learning activities for their particular groups. Representatives from the various groups and levels make up a systemwide Policy Committee.

In the fall of 1970, an estimated 66,000 children and 2,700 teachers were involved in fieldtesting the Multiunit School concept in two statewide networks, Wisconsin and Colorado, plus schools in Oregon, Minnesota, Iowa, Illinois, Ohio, Pennsylvania, and New York. Studies by the Center for the Advanced Study of School Administration, at the University of Oregon, showed higher student achievement and also higher teacher morale in Multiunit Schools. The program also provides an enriched environment for preservice and inservice teacher training.

Individually Prescribed Instruction, popularly known as IPI, was used for mathematics in more than 160 schools in 32 States during fiscal year 1970. In addition, almost 50,000 children were using IPI in reading. Spelling, handwriting, and science programs using IPI were being field tested, and IPI materials were being developed in social studies.

With IPI, each step in learning has been spelled out and materials have been developed or adapted for children to use in mastering these steps. Each child is responsible for obtaining the material he needs, learning the basic skills, and deciding when he is ready to be tested for his next prescription. Participating children are generally enthusiastic about their freedom to work individually or in small groups while the teacher moves about the room to answer questions or give assistance if appropriate. Tests have shown that IPI students achieve more than children in traditional classrooms and that those who learn slower or faster than others are spared the frustration of pacing their learning with the average.

Based on extensive Cooperative Research support at the Learning Research and Development Center at Pittsburgh, IPI has been further refined and disseminated by the Philadelphia-based educational laboratory, Research for Better Schools. To help teachers keep track of individualized student performance, diagnose learning problems, and prescribe appropriate lessons and materials, techniques are being developed for computer monitoring of individual and group performance. The Laboratory has provided a specially designed pretraining program for IPI teachers. Studies have shown that IPI is especially effective with urban disadvantaged children.

"Learning Through Inquiry," a 32-minute color film, was an outgrowth of inquiry and self-directed learning strategies being developed by the Mid-continent Regional Educational Laboratory (McREL, Kansas City, Mo.). The film brings out the essential dimensions of student centered inquiry in fourth grade social studies and tenth grade biology in innercity, suburban, and rural schools. Both public and parochial schools were involved in development of this 16 mm. film by McREL, with the cooperation of the Institute for Developing Educational Ideas (IDEA, Melbourne, Fla.), an affiliate of the Kettering Foundation. McREL's work on behalf of the inquiry role approach, concentrated largely in biology, included production of study guides, training of teachers in using problemsolving techniques, and development of tests to measure achievement from self-directed inquiry.

The Upper Midwest Regional Educational Laboratory (UMREL, Minneapolis) demonstrated the operation of a school-wide program of behaviorally engineered learning, using the plant and personnel of St. Stephen's Elementary School in the Minneapolis inner city. This is an expansion and application of procedures which the laboratory developed earlier in two disadvantaged classes to show how academic performance could be dramatically increased and disruptive social behavior decreased. Besides giving attention to appropriate staff training and curriculum materials, the program included work with a local policymaking school board (parents and other community representatives), as well as use of neighborhood residents trained for work as teacher aides.

Among the individual projects seeking to improve instructional systems, one on media environment, conducted at the Bedford Central School District, Mt. Kisco, N.Y., was designed to help teachers change roles from disseminating information to guiding independent learners. The final report narrates steps in planning and inservice training for use of audiovisual materials and information retrieval to change teacher and pupil attitudes toward learning.

Another media-related project, on Computer Utility for Educational Systems, defines a system design and procedures for making computer services broadly available at the high school and junior college levels to serve the dual purposes of instruction and administrative support.

CURRICULUM DEVELOPMENT

Some fiscal year 1970 Cooperative Research activities were concerned with improving curriculum substance, as distinguished from improving teaching and learning within a substantive context. For the most part, these fiscal year 1970 investments represent the final segments of curriculum development activities started in previous years.

In social science areas, for example, the Foreign Policy Association completed a survey of attitudes of American educators and social scientists toward the international education of elementary and secondary school pupils and provided a list of objectives and recommendations for international affairs education. The University of Texas completed development of guidelines and resource materials on Latin America for use in grades 1-12, and teachers and pupils were reacting favorably to classroom testing and subsequent evaluation. Also the inquiry program featuring African history and culture, developed by Carnegie-Mellon University in Pittsburgh, was tested with over 4,000 secondary students, preliminary to being revised for publication and broadscale use. The materials and the inquiry approach are designed to dispel some of the stereotypes, myths, and misrepresentations about the land and people south of the Sahara.

San Francisco State College finished work on a comprehensive curriculum model for social studies (grades 1-8), which integrates materials from all the social sciences around core concepts which have meaning to elementary students. Also, the Intergroup Relations Curriculum developed by staff at Tufts University's Lincoln Filene Center was being adopted by elementary schools

throughout Rhode Island, and related inservice teacher training programs were laying the foundations for use elsewhere.

Patterns in Arithemetic (PIA), a complete modern math course for grades 1-6, was used by 358,000 children and 10,000 teachers in 15 States during the 1969-70 academic year. This highly praised program developed by the Wisconsin Research and Development Center for Cognitive Learning (Madison) uses instructional television for teaching children and their teachers. Field tests with about 9,000 children in Alabama and Wisconsin found that nearly 70 percent of first graders in the TV course scored higher than half of the children in the Nation on standard achievement tests. The PIA model includes 336 videotapes, achievement tests, supplementary materials for teachers and pupils, and teacher training. In Alabama, Kentucky, Maine, South Carolina, and Vermont, the course is beamed over statewide educational television.

A new unified mathematics for grades 7-9, developed through a project at Teachers College, Columbia University, was used by about 5,000 students during the 1969-70 school year and almost three times that many the following year. As a result of growing adoption of this curriculum, a new Regents Examination was prepared for New York students, and Educational Testing Service has conferred about incorporating concepts from this modern math program into the College Entrance Examination. Also, a dozen countries in North Africa and the Middle East are moving toward adaptation of the unified math approach in their programs. National Science Foundation supported teacher training for the new math for grades 7-9 and is funding further development of the curriculum for grades 10, 11, and 12.

Seventy thousand junior high school students in 22 States participated in field testing a new science sequence which uses laboratory experiments to help students learn scientific concepts. Florida State University (Tallahassee) combined support from Cooperative Research and from the National Science Foundation for this Intermediate Science Curriculum Study (ISCS). Each student proceeds at his own pace through a set of core activities until he has mastered certain concepts and skills. He may also complete optional "excursions" for additional knowledge, or remedial excursions to develop needed skills. Interest in the program has spread abroad, and teacher conferences in Japan, the Philippines, Australia, and India have dealt with it.

Cooperative Research support for a conference on bilingual education brought together specialists, government representatives, and others to chart steps toward resolving problems of children whose home language is not English. Papers prepared for the conference and recommendations following it were used in planning and developing model bilingual communications programs at the preschool and elementary levels.

Bilingual programs at two educational laboratories have drawn wide attention. The program being developed by the Southwestern Cooperative Educational Laboratory (Albuquerque) is designed to help Mexican American, Navajo, and Pueblo children from 3 to 9 years old develop a positive self-image while providing a usable language for general learning success. The Southwest Educational Development Laboratory (Austin) has been developing and testing a program in which a Spanish-speaking child learns content material in his native language at the same time he is taught English as a second language. The UCLA Center for the Study of Evaluation has been cooperating with the Office of Education's bilingual education efforts by formulating guidelines and planning the strategy for auditing title VII ESEA projects.

Activities to improve the study of foreign languages are funded out of title VI NDEA authorizations, not out of Cooperative Research. Thus far, materials have been developed for more than 130 of the less commonly taught foreign languages, from Amharic to Vietnamese, together with audiolingual material for teaching modern foreign languages, such as French and Russian.

EDUCATIONAL COOPERATIVES FOR ISOLATED SCHOOLS

To overcome such handicaps as poor access roads, mountainous terrain, and lack of resources, the Appalachia Educational Laboratory (AEL, Charleston, W. Va.) has developed strategies for using educational cooperatives to help rural schools provide quality instruction. In these cooperatives, isolated schools use leased telephone lines, mobile units, and other media to improve teaching and learning in sciences, algebra, French, creative writing, business, driver education, and other subjects. On the horizon is the quasi-laser link, which can transmit 32 channels of telelessons simultaneously.

Besides improving instruction, cooperatives generally lower instructional costs and save transporting children great distances to consolidation points. In an East Tennessee cooperative using mobile teachers and equipment, driver training was available to all 2,500 16-year-olds where formerly only 40 percent of these students had access to such training at a per-pupil cost one and a half times the cooperative's cost.

The first operational cooperative was pilot tested in seven East Tennessee school districts in fiscal year 1969.

The initial structure, a management handbook, and programs were later field tested in the second and third cooperatives, in Kentucky and Virginia, as a basis for expansion to other areas. AEL has not only assisted with program development in the cooperatives but has also designed and tested mobile facilities. Also, because of the high unemployment and shortage of guidance personnel, AEL developed vocational packages to present information needed for career choices and installed them in pilot schools as well as in mobile vans. Materials include viewscripts on careers and tapes on which actual employees discuss their occupations.

AEL has also been helping school systems use cooperatives for teacher inservice training. For example, one cooperative serving five school systems in Southwest Virginia prepared 10 kits on "Newer Trends in Education." The object was to bring together materials teachers and administrators needed for consideration of such techniques as nongraded classrooms and team teaching. Each kit contains books, monographs, filmstrips and recordings, worksheets and evaluation forms, examples of handbooks from operational programs, and other items which may be useful in intensive inservice programs focused upon educational improvements.

The Northwest Regional Educational Laboratory (NWREL, Portland) has taken a slightly different approach to improving education for rural and other isolated groups. Whereas AEL has concentrated on cooperatives, NWREL seeks to broaden and enrich curriculums in small schools through helping teachers learn to assist with self-instruction in academic and vocational subjects, and through preparation of materials for such individualized learning.

URBAN EDUCATION

The Center for Urban Education (CUE), based in New York City, has been one of the pioneers in developing curriculum and community programs to help inner-city children and their parents find school more relevant and less alien. One of CUE's more promising programs in fiscal year 1970 was the prototype design for and testing of neighborhood learning centers for elementary age children, teenage trainee leaders, and adult supervisors.

Another of CUE's contributions has been a series of social studies units, called "Planning for Change." This curriculum was developed and field tested to give the student an understanding of and experience with the ways in which he can bring about constructive change in his neighborhood and the larger community.

In cooperation with the New York City Puerto Rican Forum and Society of Bilingual Teachers, CUE prepared a 15-week training course in leadership and tested it with 100 Puerto Ricans and 35 bilingual teachers. Also, to aid inexperienced teachers, CUE designed and tested curriculum guide cards in nine subject areas with 11,000 third graders and 575 teachers in New York City, Nashville, and Bridgeport. By fiscal year 1970, CUE had completed the fourth year of development for a beginning reading program for inner-city schools and had field tested the second year of an early childhood curriculum with kindergartners and 4-year-olds in nine schools.

To help reduce the alienation between the inner-city community and the middle-class school system, CUE operates a decentralized clearinghouse reference center for the public, and training programs for teachers and community leaders associated with decentralized school districts. In its urban information program, CUE has completed numerous monographs and publishes the *Urban Review* and *The Center Forum,* highlighting specific urban problems and educational programs.

Besides the extensive work being carried out at CUE, many Cooperative Research projects in fiscal year 1970 were dealing with cultural differences, disadvantagement, and other factors which affect urban education. Also, the Mid-Continent Regional Educational Laboratory (McREL, Kansas City) won an award for its realistic preservice teacher training program in which potential inner-city teachers live and teach in an inner city and work with community agencies and professionals to develop necessary skills. Eight other laboratories also had programs related to urban education, particularly for Negroes, Spanish-Americans, and other minorities.

In the spring of 1970, the American Association of School Administrators, meeting in Atlantic City, recommended increased urban and rural education research. Their formal resolution reads: "Urban and rural schools require special structures for both funding and governance, special methods of staffing and teaching, and special curriculums, materials, and facilities. To be appropriate, these must be tailored to the degree of population density, conditions of existence, and nature of the student population. . . . Specifically, we advocate the conduct of research on a continuous basis by agencies at all levels into the specific needs and abilities of children in these areas. . . ."

Two studies completed by the Johns Hopkins R&D Center early in fiscal year 1970 reaffirmed earlier evidence that large city public school systems were continuing to discriminate against the nonwhite and the poor. In "An Empirical Analysis of Economic and Racial Bias in the Distribution of Educational Resources in Nine Large American Cities," the investigator concluded that instructional expenditures within such city systems are

distributed unequally, and that less is spent on nonwhite and poor students than on others.

The conclusion of the report states that:

> "The most experienced teachers are generally to be found in schools attended by the less poor white children. More important, the verbal ability of teachers, an important predictor of teacher effectiveness (although not highly correlated with salary or experience), is also higher in these schools. . . ."
>
> "One must conclude . . . that the immediate cause of the economic and racial biases in the allocation of teaching resources lies in the teacher assignment system: the single citywide salary schedule, the allocation of attractive teaching posts to the most experienced teachers; and, in some cities, the formal pressures that are apparently used to keep black teachers in black schools."

The other study, "Racial Bias in the Allocation of Teachers in Sixty-nine Urban Elementary School Systems," was in substantial agreement, noting that "Inequality and discrimination are typically maintained in America's city school systems by keeping poor and nonwhite students at least partially segregated, and then assigning the more experienced and more verbally able white teachers to schools attended by the less disadvantaged white children."

SCHOOL ADMINISTRATION

The school administrator's wisdom, skills, and personality are key factors in determining the direction and pace of educational reforms in the classrooms under his jurisdiction. During fiscal year 1970, the most concentrated Cooperative Research in school administration was at the Center for the Advanced Study of Educational Administration (CASEA, University of Oregon, Eugene). The Center not only carries out research and development but also tests out strategies in workshops to help school systems improve their decisionmaking and subsequent program administration. During 1970, CASEA won the Douglas McGregor Memorial Award for the year's outstanding story of attempts to integrate research into action. The article, entitled "Improving Organizational Problem-Solving in a School Faculty," appeared in the *Journal of Applied Behavioral Sciences.*

One of the Center's 1970 documents, "A Preliminary Manual for Organizational Training in Schools," provides exercises and procedures for improving working relationships within school settings. Another, "Stability and Change in the Communication Structure of School Faculties," shows how person-to-person communication is influenced by such impersonal factors as division of labor, allocation of space, and turnover of personnel.

Other CASEA activities during 1970 included development and testing of instructional packages to help school administrators design, adopt, and operate Planning, Programing, and Budgeting Systems (PPBS) in their school districts, carry out related evaluation, and determine cost effectiveness. PPBS materials tested in fiscal year 1970 were to be further refined for mass dissemination by spring of 1971. Ongoing CASEA research during 1970 included a study to determine which people at what level assert influence on instructional matters. The results were synthesized in reports on educational politics, response styles, interest groups, and opposition to superintendents and board members.

Aside from the work being carried on at CASEA, fiscal year 1970 Cooperative Research support was provided for a project to develop a model for a National Academy of School Executives. To help administrators gain new skills and insights, the American Association of School Administrators (Washington, D. C.) initially held 17 seminars and clinics to deal with such subjects as student activism, militant pressure groups, negotiation, sensitivity training, racial issues, and power structure analysis. Following this activity, support was provided to design operating procedures for the residential and continuous study phase of a potential Academy to help administrators comprehend broad, strategic problems in education. Such an Academy could deal with innovations in school staffing and organizational patterns, human factors in the improvement of educational administration, controversial issues confronting schools, and advanced program planning and budgeting analysis.

School administrators also stand to gain from the deliberations of the Commission on School Finance, which was authorized by Public Law 91-230 and received its initial support from Cooperative Research near the close of fiscal year 1970.

SCHOOL FINANCE RESEARCH

The Authorization—Cooperative Research Act, as amended by P.L. 91-230, Sec. 809(c):

Sec. 2(a)(3) The Commissioner shall, pursuant to his authority under this Act, provide for research regarding the problems of financing elementary and secondary education. Such research shall include, but not be limited to, recommendations concerning—

(A) an appropriate division of responsibility among local, State, and the Federal Government in financing elementary and secondary education;

(B) an appropriate balance of categorical aid, general

aid, and school construction aid in the total Federal responsibility for financing elementary and secondary education;

(C) new approaches to relieve the fiscal crisis now facing the schools;

(D) the use of Federal revenue sharing for supporting elementary and secondary education; and

(E) methods to minimize variations within and among States in per pupil expenditures for elementary and secondary education.

. . . the Commissioner shall report the results of, and recommendations with respect to, research under this paragraph as a separate and distinct part of his annual report pursuant to subsection (d).

The National Commission

P.L. 91-230, Sec. 809(d): The Commissioner shall, not later than ninety days after the date of enactment of this Act, establish a National Commission on School Finance. . . .Such Commission shall make a full and complete investigation and study of the financing of elementary and secondary education, including, but not limited to, the matters referred to in section 2(a)(3) of the Cooperative Research Act (as amended by subsection (c) of this section). . . . Funds available for the purposes of the Cooperative Research Act and for the purposes of section 402 of Public Law 90-247 shall be available for the purposes of this subsection.

Sources of Support

Fiscal Year 1970

Authorization	Amount
Cooperative Research	$ 1,443,191
Laboratory and Center Programs	742,600
General Research Projects	425,522
ERIC Clearinghouse Dissemination	10,000
Statistical Surveys and Evaluations	265,069
Other Authorizations	2,099,404
Elementary and Secondary Education	1,415,405
Education of Handicapped Children	141,906
Adult and Vocational Education	68,410
Libraries and Community Education	473,683
Totals	3,542,595

School finance studies during fiscal year 1970 received approximately $3.5 million in Office of Education support. In addition, some studies were continued with support from the previous year but without additional funds. Also, cost effectiveness was a factor in many studies whose primary focus was school organization and administration, or development of instructional practices. Four research training programs had components for training personnel for studies related to school finance.

Cooperative Research was the source of support for establishing the President's Commission on School Finance and also for one of the satellite components of the National Educational Finance Project, which had components supported from three other authorizations as well. Also, school finance was an important element in many of the evaluation studies which derived support from Cooperative Research and also from Sec. 402 authorizations for program planning and evaluation. For example, the Belmont Program is studying the impact of Federal and State expenditures on schools and pupils. The goal is to measure the flow of dollars to programs and services delivered to particular target populations—e.g., disadvantaged, migrants, etc.—and the extent to which these pupils benefit from their participation in special programs funded in whole or in part from Federal and State sources. A handbook will serve as a guide to help State Education Agency grant managers identify effective practices and report on successful projects within the State and region. By the end of fiscal year 1970, various pieces of this effort were being tried out for the elementary level within the States, preliminary to broadscale adoption, and work was started for a parallel program at the secondary level.

Key Issues Challenging the National Commission

The National Commission on School Finance authorized by Public Law 91-230 and established by Executive Order, received initial fiscal year 1970 support from Cooperative Research. Based on a 2-year study of research and information about prevailing practices and promising alternatives, the Commission will make judgments and recommendations for its report, which is due in April 1972. Key issues challenging the Commission have been identified as follows:

- What should be the role of each level of government to provide quality education?
- How can we improve the existing State and local tax and revenue structure to maximize revenue yields and minimize public objections?
- How can we improve the present distribution of State and local education funds to maximize quality and minimize disparity?
- If we can establish a working definition of "Equal Educational Opportunity" for all individuals, in both a fiscal and educational sense, what are the related roles for each level of Government?
- What are the unique problems of financing the "innercity" schools and what can be done now?

- What are the unique problems of financing the education of special or high-cost target groups, such as Negro, Mexican-American or other minority groups, as well as handicapped children and those children living in sparsely populated areas?
- On what basis is there justification for public support to a child, regardless of the school attended?
- How can we determine what educational outputs should be and the techniques to measure them?
- What changes in purposes, procedures, or institutional arrangements are needed to improve the quality of American education?
- To what extent do new technologies increase or decrease costs, and are they worth it in terms of instructional effectiveness?
- What is the potential of more efficient resource utilization through improved management techniques, including use of technological innovations? What are the enrollment and financial projections for the 1970's and their implications for financial requirements?
- How adequately do statistics and data portray the results of Federal-State-Local programs in terms of investments?
- To what degree is the public purpose served by the operation of nonpublic schools?
- To what extent can public resources be used for nonpublic schools and what are the attendant obligations of nonpublic schools?
- How can we illustrate the economic benefits of education?
- How can the Federal Government best direct its financial assistance in a manner most consistent with the "new federalism" as well as national goals?

REGIONAL RESEARCH

The Regional Research Program uses specific allocations from Cooperative Research to support significant small scale research activities and broaden participation in the research effort throughout the various regions. In the past, two kinds of grants have been involved. Small project grants support activities which require no more than $10,000 in Federal funds and can be completed in 18 months or less. Research development grants, known as Consortiums on Research Development (CORD grants) have been used to help groups of higher education institutions develop their research competencies, particularly through staff participation in research on their own programs.

Small Research Projects

The entire Regional Research Program is particularly beneficial to "research-small" institutions—defined as those which received less than $20,000 in Federal funds from 1963 through 1967. Whereas only 15 percent of the projects were at research-small institutions in 1966, the proportion had risen to almost 30 percent by 1969 and 1970. Administration by the regional offices brings selection, monitoring, and related services close to the participants in the program. The regional breakdown of projects funded in fiscal year 1970 is shown in the following table. By areas of investigation, 58 projects were basic studies, 20 school organization and administration, 17 early childhood, 14 disadvantaged, 12 higher education, 11 reading, 5 teacher education, and the remaining 70 scattered throughout other fields.

One of the most widely publicized small projects was a K-12 curriculum on the dangers of drug use and abuse developed by the Laredo (Texas) Independent School District. It was field tested with 5,300 students and 210 teachers and revised to incorporate student and teacher feedback in time for wide use in the fall of 1970.

Summary of Regional Research Program Activities
Fiscal Year 1970

Region	Proposals Received	Projects Funded	Program Limitation	No. Inst. and Agencies Involved	No. Cong. Dists. Involved
I	76	23	$155,234	16	12
II	165	34	321,600	21	17
III	75	18	155,533	16	12
IV	70	14	162,802	10	10
V	180	41	348,000	25	21
VI	101	25	187,833	20	21
VII	120	14	125,100	13	14
VIII	34	8	77,500	7	5
IX	132	30	266,398	24	20
TOTALS	953	207	1,800,000	152	132

From the rural setting of Northwestern Missouri State College, Maryville, a small project to develop a culture fair, nonverbal individual readiness test for disadvantaged children involved at least one sample class of children from every State. The instrument was administered in 665 urban and rural Head Start and day care centers to 11,933 children, whose ages ranged from under 3 to 9 years.

Regional research support was also used for a two-part study by the Maine State Department of Education to develop a series of Indian history and culture videotape lessons for the Passamaquoddy Indian children living on an island characterized by extreme poverty. By presenting the positive aspects of Indian history and culture through color and sound films, slides, tapes, songs, and skills, the curriculum—developed on and by Indians—proved effective in changing attitudes, particularly in relieving negative self-images and counteracting anticipation of rejection and failure.

Consortium Research Development Grants

Funds available for CORD grants have dwindled under the growing pressures for all kinds of support from the Cooperative Research general education budget line. Whereas, in 1966, this program announced $50,000 grants for consortiums, with the possibility of renewal for up to 3 years, by fiscal year 1969 funds were not available for any new grants and by fiscal year 1970 consortiums averaged only a little more than $10,000 each, which is approximately the equivalent of regular small projects administered through the regional offices. The following table shows data for research development grants between fiscal years 1966 and 1970.

Research Development Grants Administered through the Regional Research Program, Fiscal Years 1966-1970

Fiscal Year	No. of Consortia	No. of Inst. Involved	Amount
66	3	10	$150,000.
67	17	110	809,457.
68	24	121	977,222.
69	13	106	446,800.
70	13	103	135,326.

Fiscal year 1970 saw the culmination of a grant to an Oklahoma consortium composed of 33 of the 35 higher education institutions in the State. During the life of the grant, staff at these institutions engaged in numerous activities—research surveys and workshops, development seminars, pilot research studies, individualized laboratory experiences, and feasibility studies—to develop intra- and interinstitutional research capabilities and improve the quality of instruction in Oklahoma colleges and universities. The $214,000 total grant over a 3-year period stimulated other research grants four times this amount and was the catalyst in creating a $1.5 million investment of public and private funds in the first stage of a statewide microwave instructional and data network linking major industrial systems to institutions of higher education.

VI. HIGHLIGHTS OF ACTIVITIES SUPPORTED BY SPECIAL BUDGET LINE AUTHORIZATIONS

Through the years, the broad authorizations of Cooperative Research have made its appropriations a target for those who seek support in emerging critical areas. Generally, this is first reflected in pressures upon the general research and development budget lines until special authorizations are provided. In some instances, the special provision has come through specific Cooperative Research budget lines—for example, the National Achievement Study and support for Evaluations and Statistical Surveys. In other instances, provision has come through separate legislation—most recently, for example, drug abuse and environmental education.

Accomplishments from special line items in the fiscal year 1970 Cooperative Research appropriation follow. The investment in research facilities also is treated in this section because the support was a carry-over from special appropriations in previous years.

RESEARCH TRAINING

In fiscal year 1970, the Research Training Program moved toward drastic reorientation to redirect its resources toward greater emphasis on apprenticeships and to broaden its emphasis to provide training for those who develop, test, and diffuse educational innovations and evaluate programs at all levels. The decision to make this change was based on an extensive review of the 5-year program and a manpower report estimating where shortages are most critical.

The 107 programs funded during fiscal year 1970 therefore represent an effort to develop advanced innovative training materials and procedures for the program's new direction. At the same time, ongoing programs were undergoing intensive evaluation to see which could be redirected to provide the differing levels and kinds of training needed.

Graduate training support was provided for 695 trainees. Most of the trainees were in continuation programs based on 3-year sequences. However, as a result of intensive management review, no new traineeships were awarded in 36 of the programs, and guidelines for needed changes were presented to the remaining programs.

Short term training was provided to 1,922 trainees in 16 programs. Three of these were summer institutes which focused on recruiting and training representatives from racial minorities for roles in innovation and evaluation units.

Seven projects developed content and training materials for neglected research functions—such as development, diffusion, and evaluation—and 12 projects designed improved ways to link formal training with inservice training and supervised internships in school systems, State education agencies, R&D centers, and educational laboratories.

DISSEMINATION

The National Center for Educational Communication (NCEC) was established near the close of fiscal year 1970, thus giving a separate identity to work formerly carried on as a division of the National Center for Educational Research and Development.

NCEC used its $6.7 million from the fiscal year 1970 Cooperative Research appropriation to carry out activities in the following six areas.

For the spread of exemplary practices, work was initiated to provide descriptions of 30 tested reading programs to be used in the Right to Read effort; 33 promising early childhood education programs for the White House Conference on Children; and 40 tested approaches to individualized instruction. The design phase of an educational products display also was completed.

To strengthen State and local dissemination capabilities, pilot dissemination programs were established in the Oregon, South Carolina, and Utah State education agencies to develop models for adaptation in other

States. Also, the Texas Education Agency received support to train some key dissemination personnel from all 50 States.

By the end of fiscal 1970, the Educational Resources Information Center (ERIC) system had 20 decentralized clearinghouses, each responsible for a particular subject field. (See appendix D.) During the fiscal year, 24,000 new reports were added to the collection, compared to 15,000 the year before. Similar increases were found in the number of standing purchase orders for all ERIC reports, the sales of separate reports, and the number of responses to requests for current information.

Interpretive summaries, in the form of work kits, were funded on 10 critical educational problems and disseminated to local educators through cooperative arrangements with State education agencies. Called PREP (Putting Research into Practice), these were on such topics as elementary mathematics, individualized instruction, application of reinforcement principles, teacher selection and evaluation, school-community relations, black studies in the junior college, and educational cooperatives.

To improve dissemination practices, evaluation was initiated on the model programs in the three previously mentioned States, and several training programs were strengthened for persons who help local educators retrieve educational information.

General dissemination activities developed to support the Right to Read program included film production, development of radio and television spot announcements, organization of a travelling seminar for community leaders, and establishment of a speakers' bureau.

Some dissemination activities were supported in accordance with Section 303 of the Vocational Education Amendments (Public Law 90-576) to carry out the Commissioner's responsibility for collecting and disseminating information about Office of Education programs. Among these were elements of the pilot dissemination projects in Oregon, Utah, and South Carolina, assessment of exemplary reading and early childhood education programs, and some activities to further the dissemination of products developed with Cooperative Research support.

NATIONAL ACHIEVEMENT STUDY

The National Assessment of Educational Progress (NAEP, also called National Achievement Study) was authorized by the 90th Congress to provide census-like data on educational progress. Cooperative Research funds were supplemented with support from the Carnegie Corporation and the Ford Foundation to develop the system for securing inventories of student knowledge, skills, understandings, and attitudes. Measures are to be secured in at least 10 subject areas, using carefully selected sample populations at ages 9, 13, 17, and 26 to 35. Comparable measures taken at periodic intervals will indicate educational progress.

In July 1969, the Education Commission of the States became the official agency responsible for administering the assessment. Science, writing, and citizenship were assessed in fiscal year 1970, and preparation was ongoing to assess reading and literature in fiscal year 1971, music and social studies in fiscal year 1972, and mathematics, science, and career and occupational development in fiscal year 1973. In a given 6-year cycle, reading, science, and mathematics will be assessed twice and other subjects once.

Analyses will show results by geographic region, age group, and other distinguishing factors, but not for individual participants or individual schools. Here are some examples from analyses of fiscal year 1970 assessments. Of the 9-year-olds tested in science, only 15 percent knew that coal is formed from dead plants; among 5 alternate answers, 56 percent thought coal is lava from volcanoes. Of the 13-year-olds tested in citizenship, 80 percent or more of the responses on associations with persons of other races indicated they would be willing to have someone of another race be their dentist or doctor, live next door, represent them in elected office, sit at the next table in a restaurant, or stay in the same hotel. In writing, 88 percent of the 13-year-olds, but only 71 percent of the young adults, who had taken a recent trip reported writing letters or cards, taking notes, or otherwise putting pen to paper. In his March 3, 1970 message on educational reform, President Nixon called the National Achievement Study "an important beginning in measuring the end result of education."

MAJOR DEMONSTRATIONS

In fiscal year 1970, approximately $1 million in Cooperative Research support was provided for a major demonstration known as the Anacostia Project. One of the major components was for organization and community education, and the other was for reading. The goal is to revitalize an entire 11-school subsystem, and use the process as a demonstration for other areas which suffer from crowded housing and low incomes.

Progress was made in training for community participation in decisionmaking and for outreach within the decentralized subsystem. The reading component has developed a system for using community representatives as paraprofessionals. Inservice training is provided for teachers, and reading materials are being designed for the Anacostia children.

There are growing evidences that successes of the Anacostia project are inspiring promising changes in the larger D. C. school system. For example, Anacostia provided the prototype model for the Clark plan to improve reading in the District. Also, recommendations have been sought from Anacostia for advisory board composition and parental involvement in hiring school principals. Project staff have served as consultants to other city school systems on community involvement and decentralization. Those most informed about the project note that the Anacostia community has demonstrated improved self-reliance and sense of responsibility in numerous ways, including participation in student integration programs with the more affluent areas of the District.

EVALUATIONS

In fiscal year 1970, Cooperative Research support for evaluation studies was supplemented for the first time with planning and evaluation support from the General Education Provision Act, Section 402 of Public Law 91-230. The new support was available in specified areas, leaving Cooperative Research with the responsibility for filling gaps out of its $2.796 million budget line for evaluations.

Among the studies receiving Cooperative Research support were the effectiveness of some compensatory education projects, relationships between various high school curriculums—particularly vocational—and later occupational choices, impact of enrollment increases on resources of 4-year colleges, and effects of various teacher training strategies on student performance.

Some studies were concerned with research processes and products. For example the American Institutes for Research (Palo Alto, Calif.) received support for two new projects, one to develop an evaluation system for management decisions on educational laboratories and centers, and the other to assess the development process and impact of about 20 R&D products resulting from NCERD-supported activities. Resources Management Corporation (Bethesda, Md.) received support to analyze cost factors and design a cost-projection model for various categories of R&D activities. A cluster of contracts provided support to review management and other activities of the Educational Resources Information Center (ERIC) system.

One of the potentially most significant fundings was to Rand Corporation (Santa Monica, Calif.) to develop an organizational structure and staffing patterns for the proposed National Institute of Education.

STATISTICAL SURVEYS

The $1.9 million in Cooperative Research support for statistical surveys in fiscal year 1970 was used for 32 contracts to improve statistical services in four areas. Work on prototype cost sharing on higher education facilities was supported to enable the states to provide better and more timely survey data. Studies also were funded to improve the general information data collection systems, to reduce respondent burden in the number of items and the number of survey forms. Some contracts were granted to help reduce managerial data gaps, particularly in early childhood and adult education. Others were in response to current problems (such as school finance), to adapt existing series to reflect important current issues. For example, in 1970, attention to new trends and critical issues was provided by a study of the present and anticipated role of the junior college.

RESEARCH FACILITIES

Near the close of fiscal year 1970, grants to three educational laboratories brought to seven the Nation's permanent facilities to be custom designed and constructed to provide settings for continuous and long-range educational research and development. The fiscal year 1970 grants went to Central Midwestern Regional Educational Laboratory (CEMREL, St. Louis, Mo.), Southwest Educational Development Laboratory (SWEDL, Austin, Tex.), and Southwest Regional Laboratory (SWRL, Inglewood, Calif.).

CEMREL, which conducts developmental programs in aesthetic education, mathematics, instructional systems for "problem" learners, and early childhood education, was granted $2.9 million to acquire and renovate an existing facility in St. Louis. The buildings had previously been used as a Chronic Disease Hospital, but they were in a desirable location for the laboratory and could be bought from the city at reasonable cost.

SWEDL, whose major thrust is the development of instructional systems for "culturally different" youngsters (primarily Chicanos and, to a lesser extent,

blacks), received $4.1 million for the design and long-term acquisition of a condominium facility in the heart of Austin. Plans for the SWEDL facility, located close to the Texas Education Agency and other cooperating agencies, include sophisticated media systems and "landscaped" or "open space" office areas, to provide a functional, flexible, and economic facility.

SWRL, whose mission is the development of a total systems approach to education (with heavy emphasis on reading) was awarded approximately $4.3 million to plan and either construct or acquire a research facility in the Los Angeles area. Subsequently, a 12-acre tract of the Los Alamitos Naval Air Station (Orange County, Calif.) was acquired through the cooperative efforts of the Office of Education's National Center for Educational Research and Development and the Facilities Engineering and Construction Agency, Office of the Secretary.

Four major facilities grants were awarded in previous years. The University of Wisconsin received the first, for its Center for Research and Development for Cognitive Learning. By fiscal year 1970, architectural and engineering plans had been completed, construction bids had been received, and the low bidder selected. This facility, whose cost is being shared by the State and Federal Governments, will provide uniquely appropriate space for equipment, not only for the Center but also for related activities in educational psychology, educational administration, and multimedia instruction. Its construction will mark a significant milestone in federally funded educational research.

Facility planning continued in fiscal year 1970 under grants awarded in 1969 to the Far West Laboratory for Educational Research and Development (FWLERD, Berkeley, Calif.), Learning Research and Development Center (University of Pittsburgh), and Stanford Center for Research and Development in Teaching.

The total Cooperative Research investment in these seven major research facility projects is approximately $30 million. This amount, plus over $2 million used for equipment and minor facilities alterations in fiscal year 1968, includes the entire appropriation from the initial 1965 authorization of $100 million for research facilities. When completed, these facilities will be the only major, custom designed, permanent facilities in the Nation for federally funded research and development.

VII. AT THE CROSSROADS

For those responsible for managing Cooperative Research, fiscal year 1970 was a year marked by the frustration of stretching an almost static funding level to accommodate increasing pressures for systematic—and scientifically tested—educational reforms. With the unexpected absence of a separate appropriation for vocational education research, part of the already scarce Cooperative Research funds had to be used for continuation of significant research activities originally funded under part C of the Vocational Education Act. This expedient forced a ruthless re-evaluation and abridgement of ongoing studies in order to have any funds for new starts in emerging critical areas.

The year also was characterized by administrative changes within the Office of Education. The Commissioner's plans to consolidate planning, research, evaluation, and statistical services into a single unit were announced July 17, 1969. On October 5, one of these components—the Bureau of Research—officially became the National Center for Educational Research and Development (NCERD). The following May, NCERD's division responsible for dissemination under Cooperative Research authority was given separate identity as the National Center for Educational Communication.

In the meantime, a report on *Educational Research and Development in the United States* (OE-12049) was issued in December for review by the Organization for Economic Cooperation and Development (OECD). According to the foreword of this report, the genesis of the OECD request for this document came from the growing recognition that research and development can stimulate educational improvement, and the desire of OECD member nations to gain from the United States experience as they attempt to develop their own educational reforms. The report notes that various studies of the relatively new educational research effort in this country had produced "an aura of adolescent self-consciousness" which could presage an imminent take-off toward greater sophistication and more valuable impact on the educational system.

President Nixon's March 3, 1970, "Message on Education Reform" proposed creation of the National Institute of Education (NIE) as "a focus for educational research and experimentation in the United States." When fully developed, the Institute would be "an important element in the nation's educational system, overseeing the annual expenditure of as much as a quarter of a billion dollars." At the same time, bills were introduced in the Congress to authorize such an Institute.

Before the end of the fiscal year, a contract had been awarded to Rand Corporation to conduct a planning study for the proposed NIE. The study set out to answer questions in five categories: Objectives, program, organization, relationships to other parts of the education system, and initial activities. The strategy involved examination of comparable research organizations, examination of related scholarly literature, and wide consultation with individuals in education and research. Initial recommendations were not due until October.

At the end of fiscal year 1970, the Office of Education was without a Commissioner and many of the top administrative posts were vacant. Consequently those responsible for managing the Cooperative Research effort moved into fiscal year 1971 with a minimum of staff direction and a maximum of determination and hope that the new fiscal year would bring leadership for shaping new directions suitable for building the strong research and development operation envisaged in the recommendation for establishment of a National Institute of Education. An analysis of accomplishments in fiscal year 1970 and subsequent new directions in fiscal year 1971 indicate that appropriate choices were made at the crossroads.

APPENDIXES

Appendix A

FUNCTIONS OF THE ADVISORY COUNCIL ON RESEARCH AND DEVELOPMENT

Systematic research, development, and dissemination are the tools for educational improvement and reform. The same conditions which have made adequacy of highways and other public services a national concern and a national responsibility now serve to make educational improvement a national responsibility. The Cooperative Research Act is the major source of support for a coordinated national effort to produce the knowledge, materials, techniques, school organizational forms, and financial arrangements which the States and localities need to bring about these reforms.

In administering this Act, the Advisory Council on Research and Development serves the needs of the U. S. Commissioner of Education as follows:

(1) *Policy Review.*—The Council's advice is sought on planning and policy issues related to administration of the Cooperative Research Act and related activities; anticipated changes in program directions; and other items of business as requested by the Commissioner, the Deputy Commissioner for Development, the Associate Commissioner for Research, or the Council itself.

(2) *Program Review.*—The Council periodically reviews, discusses, and advises on existing programs and emerging plans involving application of Cooperative Research support specifically, and within the larger context of total research needs and available support; comments on the strengths and weaknesses of the total Cooperative Research program and its parts; and makes recommendations for beneficial changes in program emphases, in light of public needs for continuous educational improvement.

(3) *Review of Procedures.*—The Council periodically reviews, discusses, and advises on the procedures for administering Cooperative Research support. These procedures include techniques for planning, for administrative control, for reviewing proposals and contracting and monitoring projects and programs, for evaluating the effectiveness of program efforts, and for disseminating the results of supported activities.

(4) *Review of Budget Requests, Proposed Allocations of Funds, and Actual Allocations.*—The Council periodically makes recommendations for requesting levels of Cooperative Research support and reviews the allocation of these requests (and appropriations) to different elements of the total research program. Such reviews take place regularly at sessions scheduled to dovetail with the budgeting and appropriation process.

Appendix B

R&D CENTERS RECEIVING COOPERATIVE RESEARCH SUPPORT IN FISCAL YEAR 1970

General Research and Development Centers

- Center for the Advanced Study of Educational Administration
  University of Oregon, Eugene, Oreg.

- Center for Research and Development in Higher Education
  University of California, Berkeley, Calif.

- Center for Social Organization of Schools
  The Johns Hopkins University, Baltimore, Md.

- Center for the Study of Evaluation
  University of California, Los Angeles, Calif.

- Learning Research and Development Center
  Pittsburgh, Pa.

- Research and Development Center in Educational Stimulation
  University of Georgia, Athens, Ga.

- Research and Development Center for Teacher Education
  University of Texas, Austin, Tex.

- Stanford Center for Research and Development in Teaching
  Stanford University, Palo Alto, Calif.

- Wisconsin Research and Development Center for Cognitive Learning
  University of Wisconsin, Madison, Wis.

Vocational and Technical Research and Development Centers[1]

- Center for Research, Development and Training in Occupational Education
  North Carolina State University, Raleigh, N. C.

- The Center for Research and Leadership Development in Vocational and Technical Education
  The Ohio State University, Columbus, Ohio

Policy Research Centers

- Educational Policy Research Center
  Stanford Research Institute, Menlo Park, Calif.

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[1] The two vocational and technical R&D centers were initially established with support from part C. Public Law 88-210 as amended. In the absence of such funds in fiscal year 1970, they received funds from the Cooperative Research general education (project) budget line in order to sustain their momentum.

- Educational Policy Research Center
  Syracuse University Research Corporation, Syracuse, N. Y.

National Program on Early Childhood Education

- National Coordination Center, National Program on Early Childhood Education
  Central Midwestern Regional Educational Laboratory, St. Ann, Mo.[2]

  Component centers supported with Cooperative Research funds[3]

- Demonstration and Research Center in Early Education
  Peabody College for Teachers, Nashville, Tenn.
- Early Education Research Center
  University of Chicago, Chicago, Ill.
- Kansas Center in Early Childhood Education
  University of Kansas, Lawrence, Kan.
- Research and Development Center in Early Childhood Education
  University of Arizona, Tucson, Ariz.
- Research and Development Center in Early Childhood Education
  Syracuse University, Syracuse, N. Y.
- Research Program in Early Childhood Education
  Cornell University, Ithaca, N. Y.

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[2] Headquarters was moved to CEMREL June 1, 1970, from the University of Illinois, Urbana.

[3] Another component was supported by funds for Handicapped Children Research and Demonstration: Center for Research and Demonstration in the Early Education of Handicapped Children, University of Oregon, Eugene, Oreg.

Appendix C

EDUCATIONAL LABORATORIES RECEIVING COOPERATIVE RESEARCH SUPPORT IN FISCAL YEAR 1970

Appalachia Educational Laboratory
Charleston, W. Va.

Center for Urban Education
New York, N.Y.

Central Midwestern Regional Educational Laboratory
St. Ann, Mo.

Eastern Regional Institute for Education
Syracuse, N.Y.

Educational Development Center
Newton, Mass.

Far West Laboratory for Educational Research and Development
Berkeley, Calif.

Mid-Continent Regional Educational Laboratory
Kansas City, Mo.

Northwest Regional Educational Laboratory
Portland, Oreg.

Regional Educational Laboratory for the Carolinas and Virginia
Durham, N.C.

Research for Better Schools, Inc.
Philadelphia, Pa.

Southeastern Education Corporation
Hapeville, Ga.

Southwest Cooperative Educational Laboratory
Albuquerque, N. Mex.

Southwest Educational Development Laboratory
Austin, Tex.

Southwest Regional Laboratory for Educational Research and Development
Inglewood, Calif.

Upper Midwest Regional Educational Laboratory
St. Paul, Minn.

Appendix D

ERIC CLEARINGHOUSE IN OPERATION IN FISCAL YEAR 1970

ADULT EDUCATION
Syracuse University
Syracuse, N.Y.

COUNSELING & PERSONNEL SERVICES
University of Michigan
Ann Arbor, Mich.

DISADVANTAGED
Teachers College
Columbia University
New York, N.Y.

EARLY CHILDHOOD EDUCATION
University of Illinois
Urbana, Ill.

EDUCATIONAL ADMINISTRATION
University of Oregon
Eugene, Oreg.

EDUCATIONAL MEDIA & TECHNOLOGY
Stanford University
Stanford, Calif.

EXCEPTIONAL CHILDREN
The Council for Exceptional Children
Arlington, Va.

HIGHER EDUCATION
George Washington University
Washington, D.C.

JUNIOR COLLEGES
University of Calif. at Los Angeles
Los Angeles, Calif.

LIBRARY AND INFORMATION SCIENCES
American Society for Information Science
Washington, D.C.

LINGUISTICS
Center for Applied Linguistics
Washington, D.C.

READING
Indiana University
Bloomington, Ind.

RURAL EDUCATION AND SMALL SCHOOLS
New Mexico State University
Las Cruces, N. Mex.

SCIENCE & MATHEMATICS EDUCATION
Ohio State University
Columbus, Ohio

SOCIAL SCIENCE EDUCATION
University of Colorado
Boulder, Colo.

TEACHER EDUCATION
Amer. Assoc. of Colleges for Teacher Ed.
Washington, D.C.

TEACHING OF ENGLISH
National Council of Teachers of English
Champaign, Ill.

TEACHING OF FOREIGN LANGUAGES
Modern Language Assoc. of America
New York, N.Y.

TESTS, MEASUREMENT, AND EVALUATION
Educational Testing Service
Princeton, N.J.

VOCATIONAL AND TECHNICAL EDUCATION
Ohio State University
Columbus, Ohio

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